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UNITED STATES NAVY

MEDICAL NEWS LETTER

Editor - Captain L. B. Marshall, MC, USN (RET)

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MEMORANDUM FOR - ALL OFFICERS OF THE MEDICAL DEPARTMENT
OF THE UNITED STATES NAVY

Ref: (a) Memorandum BuMed: msg NH/A3-4 of 26 April 1955

1. About a year ago I addressed to all officers of the Medical Department of the Navy, a memorandum in which I outlined some of the specific objectives toward which I would strive during my tenure of office as Surgeon General of the Navy. For the most part these objectives were directed toward improving the attractiveness of a career in the Medical Department of the naval service, thereby making it possible to provide higher standards of medical care for our Naval and Marine Corps personnel and their dependents.

2. I think it is now appropriate to bring you up to date on the successes and failures we have encountered so far and I will discuss separately each of the objectives enumerated in paragraph four of reference (a).

a. The first objective I mentioned was that of obtaining a policy permitting unrestricted voluntary retirement after 20 or more years of active military service. As of the present time we have had 32 applications from individuals with more than 20 but less than 30 years' active service and all have been approved. Not all of these requests for retirement could be made effective on precisely the date desired by the individual, due to the necessity of providing a suitable relief for them. In the future it is suggested that those who wish voluntarily to retire after 20 years' or more active service, make their plans sufficiently far in advance so that the Bureau can conveniently arrange for ordering in reliefs.

b. The second objective I sought was an increase in pay for doctors and dentists on active duty in the Navy, particularly for career officers. Proposed legislation to accomplish this was recently enacted into law (Public Law 497 - 84th Congress) and it is hoped this measure will retard the resignation and early retirement rates and that it may encourage civilian physicians and dentists to seek a career in the naval service. If such a trend develops it would aid substantially in terminating, eventually, the need for doctor draft legislation.

c. The third objective pertained to stabilizing the length of tours of duty with a view to reducing the frequency of transfers. In this we have been able to achieve only a partial success and the reasons are numerous. Approximately 65% of our active duty physicians and 60% of our active duty dentists are reserves whose period of obligated service is from 18 to 24 months. This creates a serious problem due to the rapid turnover of personnel. To maintain essential hospital services it has at times been necessary to transfer

career medical and dental officers prior to the three- or four-year tour of duty which we have established as a desirable standard. We are continuing to explore every possible means of reducing this turnover and with the passage of legislation to improve career incentive, this problem may ultimately be resolved.

d. Our efforts to reduce the length of tours of sea duty have met with considerable success and will be implemented beginning the first quarter of next fiscal year when the new influx of medical officers are indoctrinated and become available for sea duty. Except for flight surgeons whose specialty training is so intimately related to carrier assignments, and certain other categories of medical and dental officers, we plan to return to a 12- to 15-month tour of sea duty followed by a shore duty assignment, or the reverse sequence.

e. The fifth objective—consolidation of medical activities to utilize more effectively our Medical Department personnel—is not a dramatic one, nor is it of great importance in any single instance, but the total of man hours saved among the several consolidations which have been effected is definitely significant. In addition, the extra dividends which have accrued from this program such as improved morale of Medical Department officers and economy of medical material, have been most beneficial.

f. The program for utilizing civilian physicians in navy industrial activities has expanded from a small beginning of 18 physicians employed on 31 December 1954 to the point where as of 30 January 1956 we had 70 civilian physicians on the payrolls. This too has had a salutary effect on the morale of some of our military physicians and in addition offers promise of improving continuity of our industrial medical program.

g. One of the major contributions your Bureau has made this past year has been in helping to develop proposed legislation to provide for dependent medical care. So much of our personnel planning and budgetary problems revolve around dependent "medicare" that I considered it one of the paramount legislative problems to be resolved, second only to the career incentive measure. A bill providing for dependent care was recently passed by the House and more recently by the Senate and we hope that when enacted into law it will establish a workable basis for providing the medical care to which our military dependents are entitled. Undoubtedly there will in the future be modifications to this law and the regulations pertaining thereto, but at least it offers something definite upon which we can base our personnel and logistic plans.

h. In strengthening the reserve components of the Medical Department we have been quite successful. Public Law 305 of the 83rd Congress (Reserve

Officers Performance Act) improved promotional opportunities for all reserve officers. Just recently there was appointed by the Secretary of the Navy a board to study the entire promotional pattern of reserve officers. This board is headed up by Vice Admiral F. L. Johnson, USN. Within the past two months we have had the number of billets for the Ensign 1995 (Senior Medical Student) Program increased from 100 to 200. Ensigns so appointed are obligated to accept appointment in the Regular Navy when tendered. Of specific interest to reserve medical and dental officers is the fact that during the last selection boards authority was granted to promote all reserve officers on inactive duty who met the qualifications for selection without being restricted by a percentage basis.

i. When the Department of Defense-sponsored medical and dental scholarship program was submitted to Congress for their approval, the Medical Departments of all three military services testified in support of the plan which would provide for subsidization of medical and dental students by federal funds in return for obligated military service. The bill failed to receive Congressional approval but may later be modified and reintroduced. It is, however, one of the areas where we did not meet with success.

j. Our objective of expanding our training program has been distinctly successful and it is personally gratifying to report to you that not only has the scope of the program been enlarged, but that its popularity has been markedly enhanced. We have increased the number of naval internships available from 176 to 200 and all have been filled under the National Internship Matching Program. Our residency training program now includes some 340 physicians in or approved for training as compared with 140 a year ago. The number of short courses authorized has been increased by about 50% and within the past twelve months we were able to budget some \$36,000 to pay for travel and per diem for some of those taking the short courses where travel is required. There has also been a 10% increase in the number of physicians in our flight training program.

k. The objective of furthering research and publication of professional reports has kept pace with the expansion of our training program. Specific figures are difficult to obtain in this regard but my impression is that overall there has been a gratifying broadened interest in these fields.

l. At the present time the Surgeon General's policy board has under study certain proposed changes for Chapter 11 of the Manual of the Medical Department which are designed to strengthen the position of the executive officers of our hospitals by emphasizing their professional responsibilities and at the same time to strengthen the position of our Medical Service Corps administrative officers in naval hospitals by transferring to them some of the

administrative responsibilities now assigned to the executive officers. When final delineation of these responsibilities is made and the Manual changed accordingly I feel certain that the role played by both the doctor and the Medical Service Corps officer will permit greater utilization of their special talents.

3. I am sure you must be aware of the many difficulties which have come up over the past two years in our efforts to maintain the traditionally high standards of Navy medical care. That we have been able to carry on in that tradition is due in large part to your individual unselfish efforts and for this I want to extend to you not only my personal appreciation but also that of the entire Navy Department.



B. W. Hogan
Surgeon General, U.S. Navy

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor are they susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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Medical Appraisal of Transaortic Commissurotomy

The first surgical method to correct commissural fusion of rheumatic aortic stenosis was conceived and employed by Bailey in 1950. It was termed transventricular commissurotomy because the operation required an entrance into the left ventricular cavity through its muscular wall for the passage of a dilator which engaged the valve from below and forcefully separated the leaflets.

The recent review by Likoff and associates of the clinical results of this technique in 79 patients, 65 of whom had aortic stenosis alone or combined with adynamic aortic regurgitation, reported an immediate operative mortality of 18% when the stenosis was not associated with other significant valve defects, and cited ventricular fibrillation as the most frequent cause of death. The clinical improvement after surgery was most encouraging, but it was tempered by a dynamic aortic regurgitation produced in 7% of the survivors.

It has been reasonable to suspect that these unpredictable deterrents to the growing promise of the surgical management of aortic stenosis originated in large measure from the operative technique which required direct trauma to the hypertrophied left ventricular myocardium and did not allow the surgeon to control the dilator digitally at the very site of its critical application.

In the interest of avoiding these patent weaknesses, and what appeared to be their unfavorable consequences, the transaortic commissurotomy was developed. This procedure avoids myocardial injury by permitting the surgeon to enter the lumen of the aorta through an artificially created pouch, and to reach the valve without unusual blood loss in order to split the commissures under direct digital guidance.

The success of cardiac surgery in modifying the devolutionary pattern of any stenotic valve lesion resulting from rheumatic activity depends upon the ability to alleviate the obstruction without unusual risk and without creating new and serious defects. The accomplishment is measured by comparing the clinical and physiologic manifestations of the disease before and after surgery against the background of their usual progress under conventional medical management.

Although an initial appraisal of transventricular commissurotomy concluded that the technique relieved obstruction and granted clinical improvement to the large majority of patients who did not obtain equal benefit under carefully regulated medical routines, it also recognized a considerable operative risk and the disturbing possibility of producing significant aortic regurgitation.

A comparison of the operative mortality of both methods reveals that the 10% risk of transaortic commissurotomy is a distinct improvement and compares favorably with the 8% death rate of mitral commissurotomy.

That a digitally controlled means of splitting aortic commissural fusion is not an absolute safeguard against the hazard of producing significant regurgitation, is disappointing. However, this is consistent with the experiences in mitral valve surgery and is a reflection of the many factors contributing to that complication, including the structural characteristics of the leaflets, the degree of calcification, and the skill and restraint of the surgeon.

Because all patients chosen for surgery had had prolonged experiences with medical management and a basic knowledge of the format of their disease, the postoperative improvement in dyspnea, fatigability, angina, syncope, and vertigo, which has been reported, is important confirmation of the effectiveness of the surgical management of aortic stenosis. Particular note must be made of the consistency with which angina disappeared following operation.

The transaortic method has not extended the percentage of patients improved or the degree of their benefit. From this it may be concluded that this or the transventricular procedure, successfully concluded, will result in equal success.

However, it is clear that not all of the patients obtained significant clinical relief. In some instances, operation was rewarded only by a continuing devolutionary state as ominous in its implications as the conditions dictating the surgical interference. When the error of creating a serious regurgitation is set aside, it is obvious that an important correlation exists between results, the morphology of the valve, and the ability of the surgeon to alter the size of the orifice. In short, transaortic commissurotomy does not permit the surgeon to overcome all of the handicaps imposed by the structural abnormalities of the valve, among which extensive calcification and valvular thickening are most important. Although it remains true that the unyielding valve is technically more amenable to the direct transaortic approach, it is highly questionable whether in the majority of patients the improved effort is sufficient to turn the course of clinical events to a highly satisfactory result.

The most significant changes in objective manifestations have been the decreased intensity of the rough systolic murmur, the increased intensity of the second aortic sound developing in over one-half of the patients, and the specific alterations in the brachial artery tracings.

Transaortic commissurotomy does not extend or alter the basic indications for the surgical treatment of aortic stenosis. The primary indication for operative interference is a combination of subjective or objective manifestations of significant and progressive pathophysiology resulting from the disease, provided none of the contraindications is present.

When indications are outlined in such broad terms, further definition is required in order to properly apply basic concepts. Because dyspnea, angina, syncope, left ventricular enlargement, and the electrocardiographic pattern of left ventricular hypertrophy, and "strain" represent expressions of significant dynamic pathophysiology, patients with these findings clearly are candidates for operation. Within this clearly defined group, it is a

reasonable contention that aortic commissurotomy is performed more safely and effectively when the clinical manifestations are recent rather than late.

A problem exists, however, with patients who are not symptomatic and who do not possess serious objective manifestations of their disease. Theoretically, these individuals represent ideal candidates for operation from a risk standpoint. However, it is conceivable also that they may survive a full, unimpaired lifetime without surgery if the valve obstruction is adynamic and not progressive. A solution is envisioned when present investigative studies clarify the correlation between valve areas, gradients across the orifice, and blood flow with the onset and ultimate progress of the manifestations of aortic stenosis.

The contraindications to operation are rarely in dispute. In general, they include those anatomic and physiologic issues which prejudice immediate recovery or serve as known deterrents to the benefit expected from surgery. A primary contraindication is the presence of additional significant inoperable valve lesions, outstanding among which is aortic insufficiency. Congestive heart failure, which does not respond to medical therapy, acute rheumatic activity, subacute bacterial endocarditis, and massive cardiac enlargement are absolute contraindications.

Although age and the functional status of the patient have a direct relation to the risk of surgery and its ultimate benefit, fixed criteria in either regard cannot be outlined. For the present, the following scheme is suggested as an aid in the selection of patients:

Group I. Patients with the auscultatory findings of aortic stenosis but without the symptomatic or objective expressions of the disease. Left heart catheterization rarely shows a significant systolic pressure gradient across the aortic valve. These individuals are not candidates for operation because there is no present knowledge that the anatomic lesion invariably leads to important pathophysiologic developments.

Group II. Asymptomatic patients with left ventricular enlargement and/or left ventricular hypertrophy and "strain." Left heart catheterization usually reveals a significant systolic pressure gradient across the aortic valve. Commissurotomy is indicated because of the presence of objective changes which presumably are progressive in nature.

Group III. Patients with either dyspnea, angina, or syncope accompanied by left ventricular enlargement and/or left ventricular hypertrophy and "strain." Left heart catheterization usually reveals a significant systolic pressure gradient across the aortic valve. Surgery is indicated because the clinical findings are manifestations of significant pathophysiology which presumably is progressive.

Group IV. Patients with advanced clinical manifestations of aortic stenosis and congestive heart failure. Left heart catheterization rarely shows a significant systolic pressure gradient across the aortic valve, because of diminished cardiac output and intrinsic myocardial disease.

Although an operation may be performed, the risk is considerable and the accrued benefits may be minimal.

In any of the operable patients indicated, the following conditions take precedence and surgery is definitely contraindicated:

1. Significant incorrectable associated valve lesions
2. Massive cardiac enlargement
3. Acute rheumatic activity
4. Subacute bacterial endocarditis
5. Intractable congestive heart failure
6. Serious complicating disease entities

The material reviewed does not permit a final evaluation of transaortic commissurotomy. From these initial experiences, the operation has materially reduced the immediate mortality of the surgical treatment of aortic stenosis and offers the considerable advantage of a direct intimate examination of the valve area and its acquired pathology. The technique does not eliminate or reduce the possibility of creating significant aortic regurgitation, and its effectiveness is limited sharply by the morphology of the valve. In spite of these restrictions, transaortic commissurotomy is a striking therapeutic agent, entirely capable of modifying the clinical pattern and certain objective manifestations of dynamic aortic stenosis. (Uricchio, J.F., et al., *A Medical Appraisal of Transaortic Commissurotomy*: Ann.Int.Med., 44: 844-859, May 1956)

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Evaluation of Methods of Treatment of Essential Hypertension

While it is generally accepted that about 95% of all hypertension is of the essential type, there still is no agreement regarding the etiology and the nature of the condition, despite the huge amount of study and writing on the subject. The types caused by renal, humoral, neurogenic, and a few other causes have been fairly well delineated. The old question regarding the relationship of essential hypertension to arteriosclerosis still remains unanswered. This failure does not indicate that no progress has been made in the knowledge of hypertension itself. Intensive research during the past 5 years has resulted in the discovery of some potent drugs for lowering blood pressure. While no ideal agent has been found to be effective in all cases, several drugs are considered useful therapeutically in some instances.

In evaluating the modern management of hypertension, it is not the purpose of this study to consider drugs only and their actions. Other methods of treatment, although well known, seem to have been half-forgotten and neglected. The failure of physicians to take adequate time to discuss fully

the significance of the individual's problems, the decreasing emphasis placed on the patient's habits, and the diminishing role of the diet in the control of hypertension are to be deplored.

In evaluating the methods of treatment of hypertension, the use of drugs and their actions have been overemphasized to the neglect of other methods of treatment, such as the role of the diet and the psychosomatic factors, e.g., the patient's mode of living and habits. These points are given attention in this article along with the authors' experience with the newer drugs. Also considered is the surgical treatment of hypertension by means of sympathectomy and adrenalectomy.

The new drugs alter one factor of the disorder, namely, high blood pressure itself, and generally fail, as far as is known, to modify some essential conditions which are a part of the disease. This relationship of the high blood pressure to the metabolic, humoral, and vascular changes associated with it is one of the disputed questions of the day, and a short discussion is given.

A classification of hypertension is presented because it is believed to be important in evaluating the patient with high blood pressure. It is emphasized that in essential hypertension the hypotensive drugs are most applicable.

To determine which patients are destined for early trouble and which may escape complications is difficult, but it is always safe advice to attempt to control excessive hypertension whenever it exists. General measures and symptomatic treatment are sufficient in many instances to control moderately high blood pressure. Attention to the patient's habits, more rest, more recreation, and less work may have beneficial effect. These are discussed.

Reduction of calories resulting in reduction of weight often leads to a lowering of high blood pressure. Restriction of total intake of fat and cholesterol have been the chief factors in dietary regulation.

Drugs, when used, should be introduced beginning with the milder agents, progressing to the more potent ones. In mild hypertension (grades I and II), mild hypotensive drugs should be used; in severe grades of hypertension (grades III and IV), more intense and potent agents in combination with the milder drugs to allay side reactions are used.

The authors' experience with 59 selected patients, followed for periods from 4 months to 15 years both as outpatients and inpatients, is reviewed. The hypotensive drugs used in this study were Rauwolfia, hydralazine, Veratrum, hexamethonium, and pentapyrrolidinium. The results parallel those of other authors in that gratifying blood pressure reduction with judicious drug use was observed. However, the authors believe that, while drugs definitely have a place in treating hypertension, they do not answer the problem completely. Other factors such as stress also must be considered.

Since the advent of the newer drugs, indications for drastic surgical measures, such as sympathectomy, have further diminished. Considering the fact that the majority of hypertensive persons live useful lives without discomfort for many years, the group which should be subjected to surgery

becomes narrow. Adrenalectomy also has been reported as of aid in treating severe hypertension, but it is too early to evaluate ultimate results. (Murphy, F.D., Schulz, E.G., Evaluation of the Methods of Treatment of Essential Hypertension: Postgrad, Med., 19: 403-415, May 1956)

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Radioactive Iodine in Diagnosis of Thyroid Disease

A large number of procedures involving at one step or another the use of radioiodine are available for rather precise investigation of thyroid function. This review analyzes briefly the major known reactions that take place during the formation, release, and degradation of the thyroid hormone and suggests how these reactions may be measured. In nearly all cases, the use of radioiodine is an important part of the determination and, in many instances, relatively simple procedures available in most isotope laboratories may be utilized for exact diagnoses. In particular, it is hoped that the fallacy of reliance on a single test for complete diagnosis of thyroid disease will be dispelled and the possibility of making a biochemical diagnosis suggested.

Accompanying tables list a few of the commonly used tests of thyroid function which employ radioiodine. Many modifications of these tests have been used, but, in general, those listed in the table are relatively simple and give important data. The extrarenal disposal rate, the thyroid accumulation gradient, and the four- or six-hour uptake are all useful tests. In a recent publication, the relative efficiency of some of these tests in differentiating hypothyroidism and hyperthyroidism has been analyzed extensively. Two of the tests listed are rarely performed for clinical diagnostic purposes (thyroid "organification" of iodine and thyroid secretion rate). The thyroid organification of iodine is included because it is easily evaluated by thiocyanate administration and may give important information not otherwise obtainable. The thyroid secretion rate, which may be determined in several ways, is listed because it represents the final function of the thyroid and is dependent upon all the steps preceding it. Many of the data listed in the tables are taken from published studies.

In the discussion, it has been tacitly assumed that complex and difficult tests of thyroid function, particularly those employing radioactive iodine, are not only necessary, but are also desirable for establishing the diagnosis of thyroid disease. This is true only in part. While it is certainly evident that careful biochemical diagnosis and the description of new syndromes of thyroid dysfunction require many or most of the tests mentioned, diagnosis of the average patient suspected of having thyroid disease does not depend on elaborate function tests. Careful clinical judgment is still of paramount importance in diagnosis. A detailed history, meticulous examination, and a certain degree of clinical acumen serve as the foundation for the diagnosis of thyroid

disease. In particular, repeated observation of the patient over a period of weeks or months frequently serves to confirm or exclude possible diagnoses. A further procedure, of which little is written, is the therapeutic trial. In patients suspected of hyperthyroidism, a course of treatment with iodine and frequent estimations of serum cholesterol and oxygen consumption, plus careful observation, will usually serve to establish or rule out a diagnosis of hyperthyroidism when most of the complicated laboratory procedures are equivocal or contradictory. Normal subjects given iodine in a dose of 50 mg. or so per day, will almost never show a rise in serum cholesterol and fall in the basal metabolism in the course of a few weeks. Patients with hyperthyroidism and particularly those with Graves' disease, almost always show both a rise in cholesterol levels and a fall in the basal metabolic rate within two weeks of initiation of therapy with iodine. The use of desiccated thyroid or triiodothyronine and I-131 uptake, to differentiate hyperthyroidism from euthyroidism, has been described and the results of such procedures are seen in the tables. The use of thyroid stimulating hormone has also been proposed to diagnose cases of minimal or potential hypothyroidism. Certain patients with just barely adequate thyroid function may fail to show an increased uptake of I-131 after thyroid-stimulating hormone administration. This same lack of response to thyroid-stimulating hormone has been found also in almost all cases of Hashimoto's struma.

The use of I-131 for anatomic localization of thyroid tissue may frequently be helpful. Struma ovarii, lingual thyroids, substernal thyroids and occasional cancers of the thyroid may be diagnosed in this way.

Radioactive iodine should be administered with discretion. It is impossible to administer radioiodine without delivering radiation to the thyroid gland. It should be borne in mind, therefore, that the administration of any tracer dose of radioiodine represents a calculated risk. It is a risk that is entirely justified if the information gained has a good chance of benefiting the patient. Radioiodine tracers to children especially should be viewed with considerable caution. (Rall, J. E., The Role of Radioactive Iodine in the Diagnosis of Thyroid Disease: Am. J. Med., XX: 719-729, May 1956)

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Primary Atypical Nonbacterial Pneumonia

Primary atypical nonbacterial pneumonia has emerged from relative obscurity to particular prominence during the past 20 years. Despite the increased frequency with which this disease is now recognized, there have been few large published series with adequate controls and serial clinical and laboratory studies which evaluate the efficacy of the various therapeutic agents presently available.

This article reports a statistical evaluation of observations made on 118 consecutive patients who had primary atypical nonbacterial pneumonia.

The planned study includes four groups of patients treated with various antibiotics. They were compared with a control group which received no specific treatment. All patients had similar serial, clinical, laboratory, and roentgenologic examinations. Investigations were also performed to correlate the incidence of hemolytic anemia with primary atypical nonbacterial pneumonia and cold isohemagglutinins.

The criteria for the diagnosis of primary atypical nonbacterial pneumonia were identical with those of other investigators. The fundamental features were:

1. Clinical history or respiratory tract disease characterized by gradual onset, cough, fever, chilly sensations, and, occasionally, substernal pain, usually without hemoptysis, abrupt onset, or an initial chill.
2. Physical examination which frequently disclosed a disparity between the minimal pulmonary physical signs and the extent of pulmonary involvement exhibited by roentgenograms.
3. Roentgenologic evidence of pulmonary parenchymal disease.
4. Absence of cultural or serological evidence of known bacterial or viral agents in the etiology of the disease.

The groups were named in conformity with the therapy received:

Group 1, No specific therapy; Group 2, Chlortetracycline hydrochloride therapy; Group 3, Erythromycin stearate therapy; Group 4, Oxytetracycline hydrochloride therapy; Group 5, Tetracycline hydrochloride therapy.

Evaluation indicates that chlortetracycline hydrochloride, erythromycin stearate, oxytetracycline hydrochloride, and tetracycline hydrochloride do not alter the duration of pneumonitis in primary atypical nonbacterial pneumonia. Similarly, Walker demonstrated that chlortetracycline hydrochloride is without effect upon the manifestations of the disease in the pulmonary parenchyma. Homer and co-workers conclude that chlortetracycline hydrochloride and oxytetracycline hydrochloride have no effect on the duration of pneumonitis in primary atypical nonbacterial pneumonia.

Although other investigators state that chlortetracycline hydrochloride and oxytetracycline hydrochloride are effective in the clinical treatment of this disease in man, and even inhibit the development of pneumonitis in cotton rats inoculated with a virus obtained from patients with primary atypical nonbacterial pneumonia, clinical practice has not always substantiated these claims. These studies demonstrate the ineffectiveness of the four antibiotics employed in influencing the duration of pneumonitis in primary atypical nonbacterial pneumonia. (LT R. L. Wolf, MC USNR, and CDR L. T. Brown, MC USN: Primary Atypical Nonbacterial Pneumonia - An Evaluation of the Efficacy of Antibiotic Therapy in One Hundred and Eighteen Cases: Arch. Int. Med., 97: 593-597, May 1956)

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The Traumatic Abdomen

This presentation is confined entirely to nonpenetrating wounds of the abdomen because these injuries present considerable difficulty in diagnosis and management. The author's findings follow:

1. Any abdominal injury is serious and any person with abdominal trauma due to blunt force, even though first appearing slight, should be hospitalized because the clinical impression differs with the stage of the injury.

2. Since the severity of an injury can often not be determined immediately, the surgeon must "live with the case" until a definite diagnosis is made and definitive therapy has been carried out.

3. Whenever possible, diagnostic procedures and the treatment of shock should be carried out simultaneously.

4. In a moderate percentage of cases, multiple lesions are present.

5. Pre-existing abdominal pathology, medical or surgical, may complicate the picture and increase the diagnostic difficulties.

6. Early in the case, a ruptured viscus may produce few signs, and delayed rupture and late sequelae are relatively common.

7. Delayed rupture presents not only a more difficult diagnostic problem, but also presents a poorer prognosis and must be constantly kept in mind.

8. Conservatism does not have a conspicuous place in the management of these types of cases and in most instances it is much better "to look and see rather than to wait and see."

Of paramount importance in every case is the treatment of shock if present:

1. Sufficient morphine should be given to relieve pain.

2. If there is no chest or head injury, the foot of the bed should be elevated.

3. Oxygen should be administered by nasal catheter after an open airway is assured.

4. Blankets should be used, but one should avoid the detrimental effect of overheating.

5. Administration of sodium chloride with 5% glucose should be begun at once, switching to plasma or plasma expanders if shock is without hemorrhage.

6. Whole blood should be started as soon as available if shock is due to hemorrhage.

7. Levophed, Solu-Cortef, or similar agents may be indicated.

8. The Levine Tube with suction is of particular value for several reasons:

- a. Diagnostic aid if blood is present in the stomach.

- b. Reduction of shock if gastric dilation is present.

- c. Therapeutic help if a gastrointestinal rupture is present.
- d. Prophylactic against adynamic ileus, gastric dilation, and aspiration pneumonia.
- e. Aid in operative technique if abdomen is to be opened.

Among some groups, a growing tendency exists to consider certain cases of abdominal injury—notably trauma of the liver and spleen—with shock controlled as not requiring surgical intervention.

In the author's experience, it is believed to be much safer in border-line cases to explore. True, the surgeon may do nothing after exploration, and true also, many would do well without surgery. The diagnosis, however, is so often in doubt, delayed rupture of hollow or solid viscera is so common, and multiple lesions are so frequent, that one had best "sin on the side of the right."

Even though the diagnosis is relatively certain and laparotomy is definitely indicated, the optimum time for exploration is often most difficult to determine, especially if the case is seen in severe shock.

If response to shock treatment is satisfactory, and pulse and blood pressure remain stabilized for an hour or so, exploration is probably permissible.

If response to treatment is evanescent, and a short period of recovery is followed by relapse, one must conclude that bleeding is continued and severe and that exploration should not be delayed. Blood should be available in adequate quantities and should be running, preferably in two veins, when the incision is made.

If treatment for shock has been adequate, continued, and intensive, and no response has been obtained, and the surgeon is relatively certain that nothing outside of the abdomen is responsible for the shock, the case is probably hopeless. These cases are a distinct challenge to the surgeon and require some fortitude, but the author's opinion is that often nothing is lost, and occasionally a life may be salvaged, by exploration.

The conclusion has almost been reached that with abdominal trauma, even in the presence of rib and vertebral fractures—often with severe hemothorax—with tenderness, spasm, and peritoneal rebound, regardless of a normal pulse, blood pressure, and count, the abdomen should be opened and an exploration done. (Cogley, J.P., *The Traumatic Abdomen: Indust. Med. & Surg.*, 25: 237-241, May 1956)

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Pregnancy and Cardiac Operations

Obstetrical rehabilitation by cardiovascular surgery has reopened the question of risk for the pregnant patient with congenital or acquired cardiac disease. Insufficient time and experience limit knowledge essential to the

management of these groups. From observations made upon limited groups of patients who have had commissurotomy for mitral stenosis, optimistic views have been expressed. Obstetrical experience with patients who have congenital cardiac disease has been only scantily documented.

This article reports data on 22 white patients who were subjected to various cardiac or cardiovascular operative procedures prior to, or during, pregnancy. Three categories are represented: mitral stenosis of rheumatic origin, 16 cases; tetralogy of Fallot, 3 cases; and patent ductus arteriosus, 3 cases. All told, 51 pregnancies occurred: 26 prior to the surgical procedure and 25 afterward. Six patients were operated upon while pregnant.

The obstetrical management of patients previously subjected to cardiac surgery should be the combined effort of the cardiologist, cardiac surgeon, and obstetrician. Improved cardiac tolerance following operations should in no way detract from interest by any of the three services. The patient should continue to be considered in the category of the pregnant patient with heart disease and receive all the care and consideration usually given to this important group of patients.

Prophylactic antibiotic therapy is considered advantageous during labor and delivery. In the authors' experience, vaginal delivery with minimal pre-delivery sedation, second stage forceps application, early episiotomy, and pudendal block anesthesia have been considered wise.

Particular attention must be given to the immediate 12-hour postpartum period. Tachycardia, orthopnea, and basal rales may forewarn of acute pulmonary edema of a sudden left heart failure. Large-volume infusions should be avoided and sodium intake restricted.

The role of therapeutic abortion and sterilization for the cardiac patient has been simplified by the advent of successful cardiac surgery. Successful surgical results prior to or during pregnancy in any type of heart disease suitable for surgical treatment make the recommendation of these measures unnecessary, provided the patient can be restored to good functional activity. By the same measure, unsuccessful cardiac surgery in a patient severely limited in her physical activity prior and subsequent to operation is substantial evidence that she will poorly withstand the augmented hemodynamic burden of pregnancy and should be considered a candidate for therapeutic abortion and sterilization. No therapeutic abortion and sterilization board should consider the question of their intended function in any female patient with heart disease in the childbearing age, whether she is pregnant or not pregnant, without first obtaining the opinions of a competent cardiologist and cardiac surgeon.

Experience has demonstrated that for the three mentioned groups the potential gestational cardiac reserve was most accurately indicated from the degree of improvement resulting from the operation; that a successful operative result usually indicated an excellent pregnancy potential while a lesser result was associated with cardiac deterioration during pregnancy. (Igna, E. J., et al., *Pregnancy and Cardiac Operations*: Am. J. Obst. & Gynec., 71:1024-1043, May 1956)

Carcinoma of the Prostate Treated
with Radioactive Materials

During the past two and one-half years, the authors have had the opportunity of using radioactive gold (Au^{198}), chromic phosphate (P^{32}), and yttrium chloride (Yt^{90}) in the treatment of patients with carcinoma of the prostate gland. Although sufficient time has not elapsed to fully evaluate any of these materials, the authors believe it worthwhile to bring their results up to date and to get some indication as to how effective interstitial irradiation has been in treating these carcinomas.

With a background of experimental work, the clinical use of radioactive materials was approached critically and cautiously. Patients were carefully chosen for injection and all cases are being followed. The majority of patients were treated at Chicago Wesley Memorial Hospital and the rest at the Veterans Administration Research Hospital where more detailed studies and follow-up were often possible. In addition to the ordinary laboratory studies routinely carried out at Wesley Hospital, it was possible at the Veterans Hospital for the Radio-Isotope Laboratory to study urinary excretion of radioactive substance daily for the first 5 days following injection. Blood samples were also drawn at 1-minute intervals for the first 10 minutes following injection, and regularly thereafter for 8 hours to determine blood levels of the isotope. Liver function tests were done preoperatively. All of these Veterans Hospital patients are being brought back at 3-month intervals for repeat perineal punch biopsy, liver function studies, blood counts, and skeletal survey.

During the period between April 1953 through August 1955, the authors treated 44 patients with carcinoma of the prostate, utilizing radioactive gold, chromic phosphate, and yttrium.

The authors' experience to date with the use of radioactive gold in the treatment of prostatic carcinoma has led them to be somewhat less enthusiastic and optimistic than other writers. Careful study of the course of the disease in the patients reported has shown that, clinically, about one-half have been benefited by interstitial irradiation with gold. Benefit objectively has consisted of shrinkage and softening of the prostate as palpated rectally. In some instances, this has been dramatic to the point of almost "normal" rectal findings which have persisted for over 2 years following treatment. In other instances, more numerous, the rectal findings have shown definite improvement, but with persistence of some fixation and hardness. Subjectively, patients have shown improvement by cessation of sloughing and bleeding and greater ease of voiding associated with reduction of size of the local tumor mass.

The authors do not believe that it is possible to evenly distribute lethal doses of irradiation by present methods of injection. This has been brought out not only by autopsy material, but also by post-injection biopsies which have all been positive with two exceptions. They believe that intersitital irradiation with radioactive gold is potentially an effective and safe method

of destroying prostatic carcinoma, but as employed at present is not a curative method.

Radioactive yttrium has been used in only 5 patients; in this study, experience with this material indicates that results comparable to those obtained with gold are possible. Yttrium emits only beta irradiation of considerable energy and is much safer for patient and operator because of the absence of gamma rays. Although it is difficult to produce and obtain at present, the authors believe that further study of its use is warranted. Experimentally, yttrium was found to distribute itself more completely in regional lymphatic tissue, but, to date there has been no opportunity to study this clinically.

Radioactive phosphorus, as employed in 5 patients, has failed to give satisfactory results. Again, the experience is too brief to draw conclusions, but is definitely discouraging. The occurrence of a serious complication, possibly from bone marrow irradiation, has caused temporary abandonment of its use.

About one-half of the patients with carcinoma of the prostate treated by injection of radioactive colloidal gold received some benefit. Two patients out of five, injected with radioactive yttrium chloride, received some benefit. Five cases, treated with radioactive chromic phosphate, failed to show any improvement and two of these patients have shown serious hematologic complications.

Urinary excretion of the injected isotope varied considerably and occurred chiefly during the first 48 hours. Blood levels of isotope reached a peak within the first 3 minutes following injection and were surprisingly high in some cases. (Bulkley, G. J., et al., Present Status of Treatment of Carcinoma of Prostate with Radioactive Materials: J. Urol., 75: 837-845, May 1956)

* * * * *

Porphyria and Chlorpromazine

Porphyria reflects a fundamental disturbance in cellular metabolism, inborn or induced, and recognition of this disease complex in any of its varied forms is always a stimulating clinical event.

Treatment of this curious condition in the past has been singularly ineffective and most frustrating. Thus, one recalls early but inconstant success with liver extract, vitamins, antihistamines, ganglionic blocking agents, ACTH, cortico-steroids and innumerable other agents aimed at control of one or more distressing complaints.

The purpose of this communication is to draw attention to the striking amelioration of symptoms and signs that has been observed during therapy with chlorpromazine.

Monaco and Leeper (Brooklyn Hospital) have treated a 32-year old married colored female for the past 15 months who exhibited typical hepatic

porphyria, with neurological and "nervous" signs and symptoms predominating. During this time, chlorpromazine has consistently ameliorated and/or aborted symptoms and six attacks characterized by intense muscular and neuritic pains, nervousness, insomnia, weakness, and diplegia. Effective dosage has been in the range of 100-200 mg. daily in divided doses.

Another case of hepatic prophyria, a 21-year old white male, one of five members of a family with the "inborn error" being studied by Robbins, Leibow and Calvy (USNH, St. Albans), presented as a typical "abdominal" variant with complaints of severe abdominal pain and obstipation for 6 weeks. Dark urine was a recent observation. Strongly positive tests for porphobilinogen and absence of uroporphyrin were noteworthy. Fecal pellets were passed after violent expulsive efforts at intervals of 7-10 days. Chlorpromazine 50 mg. t.i.d. resulted in prompt and striking relief of pain, disappearance of dark urine, and restoration of normal bowel function after two doses of the drug. The patient continued in an asymptomatic state.

Three other members of the family with positive findings are under study and in two cases both uroporphyrin and porphobilinogen tests have been positive. A 22-year old sister died in a neighboring hospital 6 months ago and was a proved case of hepatic porphyria, acute intermittent type. Her past history revealed the trials of the person with porphyria, subjected to laparotomy, dangerous sedation, and prolonged psychiatric care during a 3-year intermittently symptomatic course. Her demise occurred after a short period of fulminating neurological disease. Further control studies relative to chlorpromazine are in progress with other members of this family.

A recent communication from Dr. Cecil J. Watson corroborates these experiences with chlorpromazine and further validates its use in controlling the abdominal pain and nervous manifestations of acute porphyria.

The mechanism of action is still obscure, but certain leads are provided by chlorpromazine's proclivity for inhibiting cytochrome oxidase (porphyrin containing) activity in brain mitochondria. Other enzyme systems are presumably involved. In any event, striking benefit of a continuing nature has been observed independently by several investigators. This represents a significant advance in therapy of this colorful but confusing disease and suggests use of chlorpromazine as a control measure of considerable value. (Captain G. L. Calvy, MC USN)

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The TPI Test in the Navy

The Director of Laboratories, Naval Medical School, National Naval Medical Center, Bethesda, has pointed out that the article "The TPI Test in the Navy" published in the U.S. Navy Medical News Letter, Vol. 27, No. 6, page 35, 23 March 1956, may be subject to misinterpretation in that it pictures the test as being fully evaluated. As in the case of any new serologic

procedure, which has not withstood the test of time in broad general usage throughout the medical profession, the exact limitations of this test in differentiating syphilis from biologic false positives, and in detecting syphilis when other serologic tests fail, are still unknown. Efforts are now being made by the Public Health Service, Department of Health, Education, and Welfare, to critically compare a variety of serologic tests, including the TPI test, in a number of laboratories. This study, if it is possible to complete it, may provide somewhat different answers from those that have been available in the past. Until new data are available, the interpretation of the results of the TPI test should be made with the understanding that the test is as yet not fully evaluated in all its limitations and, as in the case of all other laboratory tests, should not be the sole deciding factor as to whether a patient has syphilis or a biologic false positive reaction in a standard serologic test. It still provides a new and valuable aid to the clinician in reaching a decision as to whether or not his patient has syphilis, but cannot supersede clinical judgment. (Preventive Medicine, BuMed)

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Submarine Medicine Practice

The Correspondence Course Training Division of the U.S. Naval Medical School in cooperation with the Bureau of Naval Personnel has recently completed extensive revision of the publication known as Submarine Medicine Practice, NavPers 10838-A.

This publication presents pertinent current information in Submarine Medicine which includes the medical aspects of both deep sea diving and the submarine service. Background information, as well as instruction concerning specific medical problems, is provided. Deep sea diving is discussed under the following topics: the curriculum for submarine medical officer students; physical standards for diving duty; history of diving and its development in the U.S. Navy; diver's equipment and communications; aspects of physics, anatomy, and physiology pertaining to diving - particularly, the effects of pressure on the structure and functioning of the body; Navy standard decompression tables; the dive; helium-oxygen diving - physiological aspects, diving gear, and safety; self-contained underwater breathing apparatus - importance, types, selection and training of personnel in its use, safety, medical problems, physiological considerations in design and evaluation, decompression, oxygen tolerance, gas mixtures, and protective clothing and other accessories; diving without breathing apparatus. Life in submarines is discussed with respect to habitability and clothing, personnel selection and assessment, escape, and medical problems of the present and of the future. With the rapidly growing interest in underwater swimming everywhere, this publication should be of value to all physicians. The discussions of diving

physiology and diving casualties are based on the considerable background of Navy medical officers specializing in these fields.

The revision of the text upon which the new correspondence course will be based has been so extensively revised that a complete new set of questions will be required. It is possible that the new correspondence course will be ready for announcement and distribution in the fall of 1956; however, no applications for enrollment should be submitted to the Commanding Officer, U.S. Naval Medical School, until such time as the correspondence course is announced. In the meantime, anyone who may wish a copy of this publication for his own personal use may obtain it from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., at a price of \$2.00 per copy. (Submarine Medicine Division, BuMed)

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Training for Duty on Nuclear Powered Submarines

A new program of training for duty aboard nuclear powered submarines has been arranged, beginning in September 1956. Submarine medical officers receiving this training will report to the University of Rochester where they may enroll in the Graduate School. Depending upon the particular courses taken, they may qualify for graduate degrees. The didactic course will last for the academic year and will be followed by a period of on-the-job training at a reactor site ashore or aboard an operating nuclear powered submarine. Anyone interested in the submarine medicine course and subsequent training for duty aboard a nuclear powered submarine should write to Director, Submarine Medicine Division, Bureau of Medicine and Surgery. (Submarine Medicine Division, BuMed)

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From the Note Book

1. The Navy Cross was recently awarded to Former Hospital Corpsman Third Class Alex J. Kitka, USN, for his extraordinary heroism while serving with a Marine Rifle Company in action against enemy aggressor forces in Korea on the night of July 16-17, 1953.

The citation is from the President of the United States. (TIO, BuMed)

2. Rear Admiral B.W. Hogan, MC USN, the Surgeon General, addressed the Surgical Section of the Scientific Assembly of the American Medical Association Annual Meeting held 13 June 1956 in Chicago. The Admiral's paper was entitled Psychosomatic Aspects of Surgery.

Admiral Hogan was also "Orator of the Day" at the Bunker Hill ceremonies, Charlestown, Mass., on June 18, 1956, commemorating the 181st anniversary of the Battle of Bunker Hill. (TIO, BuMed)

3. Dr. Karl-Ernst Schaefer, Head of the Physiology Branch of the U.S. Naval Medical Research Laboratory at the Submarine Base in New London, received the 1955 Award for Outstanding Achievement in Medical Research from the Carbon Dioxide Research Association on May 3, 1956 in Chicago, at the annual meeting of the Association held in connection with the Congress of the American Psychiatric Association. (TIO, BuMed)

4. A group of the Navy's research scientists working at the Naval Medical Research Laboratory, U.S. Naval Submarine Base, New London, has recently reported that their investigations prove that the near ultraviolet light emitted by fluorescent lights has no deleterious effect on dark adaptation and, therefore, may be freely used for all shipboard installations. (TIO, BuMed)

5. A BuMed exhibit entitled The Practice of Medicine in the Armed Forces was presented at the Annual Meeting of the American Medical Association in Chicago, the week of June 11-15, 1956. (TIO, BuMed)

6. The U.S. Naval Dental Corps Casualty Treatment Training Program, "Mr. Disaster," appeared at a meeting of the Northeastern Dental Society, held at Swampscott, Mass., June 4-6, 1956. (TIO, BuMed)

7. Dr. Hamilton Cameron, New York, announces the recently incorporated International Research Council, the first world-wide medical confraternity for the dissemination of knowledge concerning aphasia associated with hemiplegia. In January 1943, Dr. Cameron became one of the 600,000 hemiplegia aphasics. He devised a Hand Talking Chart that has proven a practical clinical aid. This has been a boon to those vocally paralyzed who hitherto had no such means of communication with those around them.

8. Systematic and continuous records on cancer for the entire State of Connecticut over the period 1935-1951 show significant progress in the attack against this disease which may be attributed to steady improvement in diagnosis and treatment. The Connecticut Cancer Record Register is unique in that it is the only known continuous record of all recognized cases of cancer collected from the total population of the state with a lifetime medical follow-up over so long a period.

Two important broad observations concerning cancer in the Connecticut population were obtained from a study of the 75,494 cases recorded in the Connecticut Cancer Record Register. One is that cancer incidence rates are clearly higher for urban than for rural populations. The other is that experience

among the 2,000,000 people in this State corroborates the sharp increase in lung cancer among men that has been noted in the national population. (Conn. State Dept. of Health)

9. The complications of infectious mononucleosis are closely associated with lymphocytic and mononuclear infiltration into the various organs and tissues of the body. A review of complications involving the neurologic system, spleen, liver, lungs, heart, mesenteric lymph nodes, kidney, eye, and skin is presented in *Ann. Int. Med.*, May 1956; J.N. Smith, Jr., M.D.

10. Twenty-six case histories are presented of patients with tears in the retina, without detachment of the retina; 40% of the patients did not develop a detachment; 20% did develop a detachment; and 40% underwent prophylactic surgery with successful results. To operate prophylactically is probably the safest course. (*Am. J. Ophth.*, May 1956; B.H. Colyear, Jr., M.D., DK. Pischel, M.D.)

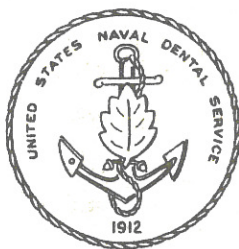
11. Seamless tubular prostheses made of compressed Ivalon sponge can be formed in any desired size and shape, with or without branches. A limited number of these vascular prostheses have been implanted as aortic and arterial grafts in human patients and appear to have given satisfactory results. (*Arch. Surg.*, May 1956; J.D. Mortensen, M.D., J.H. Grindlay, M.D.)

12. Roentgenographic demonstration of lesions in the bones of hands and feet provides valuable corroborative evidence for the diagnosis of sarcoidosis. (*Arch. Int. Med.*, May 1956, G.N. Stein, M.D., H.L. Israel, M.D., and M. Sones, M.D.)

13. The hazards of hemorrhage in thoracic surgery are not only those due to the operation itself, but also to certain defects in coagulation which may arise during the course of the operation. The latter are thrombocytopenia and hypofibrinogenemia. The preoperative detection and correction of any hemorrhagic disorder which may be present, the control of hemorrhage during operation by careful surgical technique, the prevention of over as well as under transfusion by blood replacement on the basis of measurement of blood loss, and the judicious use of dextran are equally important in the management of patients undergoing major thoracic operations. Fresh platelet preserved blood for thrombocytopenia, and fibrinogen for hypofibrinogenemia are recent improvements in the treatment of hemorrhage due to these causes. (*Canadian Services Medical Journal*, June 1956; P.G. Weil, M.D.)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

DENTAL**SECTION****Increase in Applications for Appointment**

Sixty-five completed applications for appointment in the Dental Corps of the Regular Navy reached the Dental Division, Bureau of Medicine and Surgery between 1 January and 21 May 1956. Twenty applications are from Reserve Dental officers who have served on active duty for periods of 6 months or longer. The remaining forty-five are from dental students who participated either in this year's Navy Senior Dental Student Program as Ensigns 1995 USNR on active duty, or who were selected for Naval Dental internships in fiscal year 1957. The sixty-five applications received by the Dental Division do not include those submitted as a result of the Medical and Dental Officers Procurement Act signed by President Eisenhower, 30 April 1956. Such applications are being processed by the various offices of Naval Officer Procurement and the Bureau of Naval Personnel. However, the sixty-five applications make a good start toward increasing the strength of the Regular Navy Dental Corps from its present 762 officers to two-thirds of the active duty requirement in accordance with the purpose of the new Procurement Act.

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Appointments in the Regular Navy

During May 1956, the Chief of Naval Personnel notified seven civilian dentists of their selection for appointment in the Dental Corps:

Dr. Theodore E. Carlson
1005 Stoughton Avenue
Chaska, Minn.

Dr. Robert E. Forner
1607 Potomac Avenue
Pittsburgh, Pa.

Dr. Edward J. Copping, Jr.
6907 5th Street, N. W.
Washington, D. C.

Dr. Joseph C. Gleeson, Jr.
Cherry Valley Road, Rt. #2
Princeton, N. J.

Dr. Theodore R. Hunley
338 N. Montgomery Street
Spencer, Ind.

Dr. Alvin E. Riehl
410 S. Third Street
Chaffee, Mo.

Dr. Carl J. Swanson
23303 Humber Lane
Edmonds, Wash.

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Letters Received in the Dental Division

Letters recently received by Rear Admiral R. W. Malone, DC USN, Assistant Chief for Dentistry and Chief, Dental Division, Bureau of Medicine and Surgery, are quoted:

"Dear Admiral Malone:

The present requirements for the American Board of Prosthodontics will be in effect for at least one more year, possibly longer. The only change is in the matter of the re-examination fee which has been increased to \$200, the same as the original examination fee. This had to be done because of the cost of conducting the examination.

As you no doubt have heard, the Council on Dental Education has indicated its desire to see all restorative dentistry under the Prosthetic Board. Efforts are being made to bring this about, but it will probably be some time in its accomplishment. With very few exceptions, the Board finds the Navy Dental officers among the best prepared for the Board, which is certainly a compliment to Naval Dental Training and a careful way in which these men are screened by the Bureau of Medicine and Surgery.

Best regards,
S. Howard Payne, Secretary
American Board of Prosthodontics"

"Dear Admiral Malone:

In replying to your letter of May 7, let me say that, at the meeting of the Board (of Periodontology) on February 7, 1956, the educational requirements for examination by this Board for candidates applying after that time were fixed at two formal academic years of education and training in periodontology and its supporting subjects in acceptable educational institutions. Very little discretion is left to the

Committee on Requirements for accepting equivalent education and training, that is, a miscellaneous series of short courses, teaching, hospital experience outside an acceptable residency, etc.

The Council on Dental Education is undertaking to evaluate and accredit teaching hospital residencies in the various dental specialties. Neither the Council nor the Board has, up to this time, tried to evaluate formal graduate or postgraduate courses given by dental schools except where it was known that no competent periodontist was on the staff.

Sincerely yours,
Harold J. Leonard, Secretary
American Board of Periodontology "

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Status of Inactive Dental Licenses in California

The Executive Secretary, Board of Dental Examiners, State of California, forwarded the following information to the Chief of the Dental Division, Bureau of Medicine and Surgery, 17 May 1956:

"Please be assured that you will receive any information which will in any way alter the status of dentists that are currently on inactive status with this Board by virtue of their military service. There has been rumor to the effect that legislation may be introduced that would affect the status of dentists in the military service. However, in this regard and prior to any action that would jeopardize the standing of a dentist licensed by this board, we will make every effort to contact the doctor to the end that he may reactivate his license to practice in California."

* * * * *

Procedures for Reserve Pay Units

Bureau of Naval Personnel Instruction 1300.3B prescribes the assignment and termination policies and procedures for pay units of the Naval Reserve.

This instruction applies to officers attached to, or associated with, pay units and carries pertinent information in regard to age limitations, and register numbers of senior officers in grade and corps who are eligible for the pay status. Perhaps the most important policy is that all officers in such pay status must be in the Ready Reserve or request transfer to the Ready Reserve for a period of at least one year.

This instruction is effective as of 1 July 1956, but has been modified by BuPers Notice 1300 of 25 April 1956 to become effective 31 December '56

for those serving as instructors in the Ready Reserve programs. This instruction also applies to Reserve officers taking active duty for training.

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Notice

Due to the critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve Medical officers now on active duty who desire to submit requests for extension of active duty at their present stations for a period of three months or more will be given favorable consideration. BuPers Instruction 1926.1B applies.

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MEDICAL RESERVE SECTION

New Requirements for Promotion

A new BuMed Instruction 1416.3, dated 12 May 1956, promulgates a plan to determine the professional fitness for promotion of all Reserve officers of the Medical Department (except Warrant and Chief Warrant officers who will be the subject of a future directive).

In developing this plan, it was determined that all Reserve Medical Department officers, as appropriate to grade and category, should demonstrate professional qualifications by means of successful completion of examinations or progressive study in three broad areas:

Executive. Understanding of basic principles and policies in the organization of the Department of Defense and in the planning control, and administration of the Naval Establishment. All officers of the Medical Department should have basic qualifications in this area.

Operations. Knowledge of the professional subjects essential to the efficient operation and management of Medical Department activities appropriate to the various officer grades and classifications.

Technical. Knowledge of the professional subjects essential to the efficient performance of duties characteristically assigned to the officers of the specific category within the Medical Department. In this area, the requirements will necessarily be differentiated between various established fields of professional endeavor.

Through the provisions of this instruction, Reserve Medical Department officers, other than Medical and Dental officers on Active Duty, must qualify for promotion by means of written examinations or completion of specified courses, including correspondence courses, in lieu of written examinations. Professional requirements for promotion of Reserve Medical and Dental Corps officers on Active Duty have been held in abeyance indefinitely.

The Reserve Medical Department officer on Inactive Duty is not required to take written examinations for promotion. To qualify for promotion, the inactive Medical Department officer must complete correspondence courses appropriate to his grade and category subject to the following provisions:

1. Correspondence courses which are classified are not required, but may be taken if adequate stowage facilities are available.
2. Correspondence courses administered by the Naval War College and Industrial College of the Armed Forces are not required, but the appropriate point credit may be obtained by officers who elect to take such courses.
3. In the event the correspondence courses listed in this plan for any given grade and category, subject to the provisions of (1) and (2) above do not provide the officer with an adequate number of promotion points in grade, additional courses may be selected from the approved courses outlined in the current catalog of Officers Correspondence Courses, Nav-Pers 10800.
4. Ensigns will be guided in their selection of correspondence courses by those listed for Lieutenant (junior grade) to Lieutenant.
5. Satisfactory completion of resident courses taken while on active duty, as listed in this plan, will be credited in lieu of correspondence courses required.
6. Correspondence courses taken while on active duty will be credited toward the correspondence course requirements for inactive duty.
7. Duplicate credit will not be given for promotion for the completion of a correspondence course listed for a subject for which the officer has already established his qualification by the method described in paragraph (5) above.
8. In the case of alternate correspondence courses listed under one subject, credit for promotion will be given for only one course.

Here is the plan for the promotion of Reserve Medical Corps officers on Inactive Duty only:

Part I - Executive Area

1. Administrative Organization and Regulations
2. Personnel Administration and Leadership
3. Military Justice

Required for promotion to all grades of the Medical Corps.

Part II - Operations Area

1. The Medical Department of the Navy: LTJG-LT
2. Operational Medicine: LTJG-LT
3. Bureau of Medicine and Surgery: LT-LCDR
4. Medico-Legal Matters: LT-LCDR; LCDR-CDR; CDR-CAPT
5. Retirement and Compensation: LT-LCDR; LCDR-CDR; CDR-CAPT
6. Logistics: LCDR-CDR; CDR-CAPT

Part III - Technical Area

1. Medicine, General: LTJG-LT; LT-LCDR
2. Surgery, General: LTJG-LT; LT-LCDR

Phasing Schedule for Reserve Medical Corps Officers

Officers selected for promotion in the fiscal years indicated below must be qualified in the subjects listed in the appropriate column. Where a choice of subjects is indicated, the individual officer may choose the subjects (in the specified area).

Subjects in which earned credits will be required:

<u>Fiscal Year in Which Selected</u>	<u>LTJG-LT</u>	<u>LT-LCDR</u>
1956	Any two subjects in Executive Area	Any two subjects in Executive Area
1957	All subjects in Executive Area	All subjects in Executive Area
1958	All subjects in Executive and Operations Areas	All subjects in Executive Area plus any two subjects in Operations Area
1959	All subjects in Executive Area and Operations Areas plus one subject in the Technical Area	All subjects in Executive and Operations Areas

Fiscal Year in
Which SelectedLTJG-LTLT - LCDR

1960	All subjects in all Areas	All subjects in Executive and Operations Areas, plus one subject in the Technical Area
1961 and Succeeding Years	All subjects in all Areas	All subjects in all Areas
	<u>LCDR-CDR</u>	<u>CDR-CAPT</u>
1956	Any two subjects in Executive Area	Any two subjects in Executive Area
1957.....	All subjects in Executive Area	Any three subjects in Executive Area
1958.....	All subjects in Executive Area plus one subject in Operations Area	All subjects in Executive Area
1959.....	All subjects in Executive Area plus any two subjects in Operations Area	All subjects in Executive Area plus one subject in Operations Area
1960.....	All subjects in Executive and Operations Areas	All subjects in Executive Area plus any two subjects in Operations Area
1961 and	All subjects in all Areas	All subjects in all Areas

Correspondence Courses Required for Promotion of LTJG to LT, Reserve Medical Corps Officers :

Part I - Executive Area

<u>Subject</u>	<u>Correspondence Course</u>	<u>School Exemption</u>
1. Administrative Organization and Regulations	*Navy Regulations, Nav-Pers 10740-A and *Security of Classified Matter, NavPers 10975-A1	None
2. Personnel Administration and Leadership	Leadership, NavPers 10903	None
3. Military Justice	*Military Justice in the Navy, NavPers 10993	*U. S. Naval School, Naval Justice

Part II - Operations Area

1. Medical Department of the Navy	Medical Department Orientation, NavPers 10943-A or Functions of Officers of the Medical Department	None
2. Operational Medicine	Naval Preventive Medicine, NavPers 10703 or Combat and Field Medicine Practice, NavPers 10706 or Atomic Medicine, NavPers 10701-A or Radiological Defense, NavPers 10771	**Naval Medical School Preventive Medicine and Public Health

Part III-Technical Area

1. Medicine, General	Clinical Laboratory Procedures, NavPers 10994, or	*Residency in Medicine or
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<u>Subject</u>	<u>Correspondence Course</u>	<u>School Exemption</u>
	Tropical Medicine in the Field	*Fellowship in the American College of Physicians
	or	or
	Special Clinical Services (Blood) NavPers 10998	*Board Certification in Specialty
	or	
	Frigid Zone Medical and Dental Practice, NavPers 10997	
	or	
	Submarine Medicine Prac- tice, NavPers 10707	
	or	
	Aviation Medicine Practice NavPers 10912	
	or	
	Pharmacy and Materia Medica, NavPers 10999	
2. Surgery, General		*Residency in Surgery or *Fellowship in the Amer- ican College of Surgeons or *Board Certification within Specialty

For Reserve officers of the Medical Department on inactive duty, the plan is effective on 1 July 1956, in that after this date, officers must select correspondence courses in accordance with the provisions of this instruction. Promotion credits earned by those correspondence courses commenced prior to 1 July 1956 are creditable toward promotion whether or not included in this instruction.

Information concerning the promotion plan for other grades and categories of Reserve Medical Department officers will be contained in future issues of this publication.

* Qualifications for two grades

** Courses to be developed

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AVIATION MEDICINE SECTIONOxygen - Both Types

We've got a couple of angles for you this month on handling both gaseous and liquid oxygen. Possibly this is old stuff to many, but for the newcomers we repeat the old saw: Read and heed.

A recent Medical Information Letter from MATS reports that a technical sergeant at McGuire AFB was severely burned on both hands. He had been filling walk-around oxygen bottles from a central source in the maintenance area. When he plugged one of the bottles in, a fire started. Presumably, this resulted from some type of grease or oil on one of the fittings.

We did a bit of experimenting on our own with bail-out bottles after receiving the above information. Key personnel at the San Bernadino Air Materiel Area (SBAMA) in the hydrostatic section hooked up a few bottles for us and demonstrated the absolute necessity for cleanliness. Every bottle and every fitting is examined carefully for foreign matter prior to refilling. As an additional safety precaution, personnel are required to scrub their hands thoroughly before working with the oxygen system. A greasy hand, a squirt of O₂, and BOOM!

The SBAMA people showed us another gimmick that may prove helpful to you. Seems that they recently had to discharge, purge, and refill a number of bail-out bottles that came in from another base. While they were in the process of getting the old oxygen out, a couple of flammers developed that sent the troops scattering. This was hardly the sort of thing to build up a man's peace of mind.

After a bit of experimenting, it was discovered that a static line was the answer. Apparently a fairly rapid rate of discharge sets up a good charge of static electricity. They just run a line from the metal vise, holding the bottle, to a water pipe. Apparently it works, too, for they haven't had a flamer since using the rig.

It's colder than you think. Some of you are already working with liquid oxygen. As newer aircraft hit the line, there will be more and more of that particular commodity in use. Here's one thing to watch out for: Liquid

oxygen will freeze skin tissues and the results are similar to a severe burn. Never work with liquid oxygen with bare hands. Naturally, this means wearing gloves; however, they must be loosely fitted. If you happen to get some of the tricky stuff on a tight-fitting pair of gloves, it's going to freeze 'em right now; and then, to make a pun, you're really in a bind. Remember, too, that gloves can freeze before you realize it, so watch them carefully for frost spots.

One last word of caution about liquid oxygen: If any splashes into the eyes, you're going to have a pair of frozen optics immediately. Goggles should be required. (On the Line: Abstract, Aircraft Accident and Maintenance Review, December 1955)

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New OpNav Instruction

After more than a year of study and revision, OpNav Instruction 3750.6B is now being printed and distributed. The effective date of this new Navy Aircraft Accident, Incident, and Forced Landing Reporting Procedure is 1 July 1956.

There are several significant changes involving the participation by medical officers and flight surgeons in aircraft accident investigation and reporting procedures. These changes are enumerated below. Prompt and thorough compliance with this instruction is required to enhance the medical contributions to aviation safely.

Part IV - Aircraft Accident Boards

B. Composition of Aircraft Accident Boards

1. In cases of major aircraft accidents, the aircraft accident board shall consist of at least four officers . . . one must be a medical officer (preferably a flight surgeon).

2. In cases of minor aircraft accidents, the aircraft accident board shall consist of only one officer . . . A medical officer (preferably a flight surgeon) shall be an additional member when circumstances require the submission of a medical officer's report of aircraft accident or when aeromedical factors are involved or suspected.

Part V - Aircraft Accident Investigation

D. Special Medical Requirements

1. Examination by a Flight Surgeon Following an Accident

a. The effectiveness of the medical examination of the pilot is increased when it is accomplished as soon as practicable following an

accident. Depending upon the condition of the pilot and the nature of the accident, the medical officer (preferably a flight surgeon) will determine the extent of the examination required. The object of this examination is to determine by means of examination, interview, and other methods, the aeromedical factors involved in the accident, as well as to treat the pilot and make recommendations to the commanding officer.

b. Clinical laboratory procedures will be fully utilized in those instances where carbon monoxide poisoning, other toxic substances, and altered blood chemistry are suspected. The flight surgeon will be guided by BuMed instructions of the 6510 series in obtaining and submitting such specimens.

2. Pathological Correlation. In those aircraft accidents where causative or contributory pathology is reasonably suspected, the flight surgeon will make every effort to obtain an autopsy on the pilot. The flight surgeon will be guided by Chapter 17 of the Manual of the Medical Department and pertinent BuMed instructions. The autopsy report will be forwarded as a part of the Medical Officers Report (Opnav Form 3750.8, Rev. 2-54) or submitted as a supplementary report (see Part VI, par. C.2.f. of this instruction).

3. Flight Surgeon's Investigation and Analysis. The flight surgeon member of the accident investigating board will participate actively in all deliberations and field investigations of the board. His specialized talents shall be particularly directed toward uncovering underlying mental or physical factors contributing to the pilot-error and undetermined-caused accidents. Special instructions for the flight surgeon member of the aircraft accident board are contained in the "Handbook for Aircraft Accident Investigation" NavAer 00-25-538.

Part VI - Reports Required

C. Regular Reports Required

2. The Medical Officer's Report

a. Submission Requirement

(1) Medical Officer's Report of Aircraft Accidents, Incidents, and Ground Accidents (OpNav Form 3750.8, Rev 2-54) is submitted in the case of a major aircraft accident.

(2) It will also be submitted on minor accidents, ground accidents, and incidents involving bailout or ejection of an aircraft occupant, or where the cause or contributory cause of the accident involved:

(a) Psychological factors, such as anger, domestic difficulties, or other adjustment problems, fatigue, fear; human engineering such as use of wrong control, misreading instruments, inability to reach controls, et cetera; memory failure; errors in judgment (reaction time); et cetera.

(b) Physiological factors, such as anoxia, vertigo, decompression, temperature extremes, illness, noxious or toxic substances, et cetera.

(c) Safety and survival equipment factors, such as ejection seat, G suit, pressure suit, oxygen mask, restraining harness, quick releases, helmets, et cetera.

(3) The medical officer's report will also be submitted in the case of ground accidents involving fatal critical or serious injury; where toxic substances are involved; or where psychological or physiological factors are involved.

b. Time Limit. The medical officer's report of aircraft accidents/incidents and ground accidents will be mailed within four (4) working days after the accident occurrence.

c. Distribution. (The report continues to be prepared in quadruplicate . . . the original, however, is now mailed to the U.S. Naval Aviation Safety Center, Naval Air Station, Norfolk, Va., Attn: Aero Medical Department . . . for Marine Corps activities, the report is prepared in quintuplicate. The fourth copy is submitted to the Commandant of the Marine Corps (Code AAP).)

d. Preparation. (Details of preparation do not differ markedly from the previous instruction.)

e. Enclosures. The following enclosures will be appended as applicable:

- (1) Report of autopsy
- (2) Laboratory report of tissue or blood analyses
- (3) Survivor's statement in the case of bailouts, ejections, ditchings, water crash, and survival cases, covering in detail these experiences.

- (4) Photographs of any damaged safety or survival equipment, or of the accident scene to better describe the case.

- (5) Recommendations for corrective action

- (6) Reproduction of other material considered pertinent, such as health record extracts.

- (7) Summary and conclusions from socio-psychological interviews and analysis of physio-pathological findings.

f. Supplementary Reports. Where a full report cannot be submitted in detail within four working days, the basic report will be submitted as required and supplementary information (such as lab reports, photographs, autopsy report, et cetera) forwarded as soon as possible. Supplementary reports will be identified as follows: Supplementary Information on VF-00MOR serial 1-56 concerning F4U-4, 81654, accident occurring 1 Jan 1956, pilot DOE.

* * * * *

Experiments Relating Fabric Types
With Severity of Burns

Because of military, industrial, and civil defense needs, a study of 33 different fabrics was undertaken to determine what protection, if any, would be provided against exposure to flash burns or burns due to their clothing becoming ignited. Tests were carried out by covering clipped, anesthetized white laboratory rats with each fabric and exposing them to a temperature of 2200° F over a one-inch diameter area for a period of 3 seconds, or by igniting a standard wick of the material and observing the resultant burns.

Each fabric was tested on six separate animals and the burns which developed were followed both grossly and microscopically until healing was complete. Kodachrome photographs were taken weekly for graphic comparison.

In 195 experiments in which the fabrics were heated to the ignition or melting point, it was noted that wool, asbestos, nylon, dacron, silk, or flame retardent treated cotton failed to support combustion or produce burns. Cotton/dacron and cotton/nylon yielded moderate burns which healed rapidly, as did acetate rayon or viscose rayon. Untreated cottons uniformly produced deep burns which healed slowly. Loose fitting garments proved far more dangerous than did those worn snugly.

Flash burns were studied in 204 experiments and the following features found: (1) Heavier materials protect better than light-weight fabrics; (2) Fabrics which melt, such as nylon, produce smaller burns than untreated cotton which chars beyond the exposed area; (3) Light colored fabrics offer more protection than dark; (4) Pyroset flame retardent treatment improved protection of cottons, while the Bradford Dying Association treatment was less effective; and (5) Cotton could be combined successfully with synthetic fabrics to get the best features of each. Flame retardent treatment of the combination improves it slightly. (RCS WADC-U16: Activity Report from Aero Medical Laboratory, 6 February 1956)

Resume of BuAer Program on Fire Retardent Treated Fabrics for Flight Clothing:

Initial investigations on the chemical fibers, orlon and nylon, proved unsatisfactory in that when a satisfactory treatment to offer fire retardency was obtained, the physical properties such as tear and breaking strength and sewability was reduced below the required minimums for the fabric application.

Work was initiated on the investigation of cotton fabrics with moderate success. The initial work was accomplished on the standard summer flight suit fabric, 5.0 oz. cotton twill. This windbreaker type fabric was difficult to treat for fire retardency. However, two types of fire retardent compounds

were tried, and a "durable" type was applied to this fabric to give protection against flash fires.

Work was done to obtain an air-permeable fabric of high strength with a durable fire retardent treatment. Such a fabric has been developed to give a good air permeability with durable fire retardency for the life of the fabric. This fabric is lighter in weight than the present standard fabric and affords more comfort to pilots in the summer flight suits. This fabric will be available in stock in the near future.

Evaluation work on fabrics has been conducted by the Aeronautical Materials Laboratory, Naval Air Material Center, Philadelphia, Pa.

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Fatal Decompression Sickness

An article entitled, "Fatal Decompression Sickness During Jet Aircraft Flight: A Clinicopathological Study of Two Cases," by W. Haymaker, A.D. Johnston, and V.M. Downey, appeared in the February 1956 issue of the Journal of Aviation Medicine. This report is concerned with two nearly identical cases of collapse during jet aircraft flights. Signs of central nervous system damage were observed in both. The clinical course was fulminant, with death occurring in 11-1/2 and 6 hours respectively. Both individuals were obese. There was no evidence of faulty oxygen supply during the flights.

Pathologically, the chief features were: (1) evidence of circulatory collapse; (2) the presence of intense generalized lipemia and fat emboli in the kidney in one case and fat emboli in the lungs and brain in the other; (3) a patent foramen ovale in both with enlargement of the heart in one; (4) many foci of ischemic necrosis in the brain, indistinguishable from those due to air embolism; and (5) acute ischemic change in the spinal cord in one of the cases.

From piecing together the observations, it is postulated that the following series of events occurred: As a consequence of fairly rapid decompression, fat depots became supersaturated with gas. Gas bubbles formed in fat cells, rupturing them, and as a consequence fat gained access to the venous blood stream. Gas bubbles emanating from the region of fat depots were carried to the right side of the heart and thence to the lungs where many bubbles and fat emboli were filtered out (some may have passed the pulmonary filter). This tamponade of the pulmonary circulation produced an elevation of pulmonary blood pressure which was reflected in the right heart enabling blood laden with bubbles to traverse the foramen ovale and enter the general circulation. Thus, bubbles were carried in sufficient number to the brain to contribute to the fulminant circulatory collapse and death. (Medem No. 27, Armed Forces Institute of Pathology Letter, 8 May 1956)

Do the Eyes Have It?

In medicine, we have been trained to be as objective as possible. True, we are cognizant of the subjective. In many areas of medical history and physical examination, we accept certain amounts of subjectivity for it may be our only yardstick. This has been true in certain portions of the eye examination. Particularly, in connection with phorometry and, even with the Snellen Chart, this is so. It is well known that many flight applicants, as well as other examinees, have been coached to pass the eye examination. While it is testimony to their desire to get into a particular program, be it Naval Aviation or the Naval Academy, it behooves the medical officer to determine in every case whether or not a man actually sees what he states he sees.

The opposite is also true. The eye and its supporting physiological and anatomical appendages may be adversely affected by fatigue, eye strain, and injudicious celebrations the night before—to mention but a few. It is then advisable to give the individual enough time to put his visual apparatus back into the state of "normalcy" prior to examination.

As phoria examinations are subjective, it is often necessary to have additional information to validate these results. The procedures described below work very satisfactorily. Some of them are objective and involve harmless but justifiable trickery. Needless to say, phorias should be measured before prism divergence and convergence as the extra ocular muscles fatigue easily during these examinations and will make phoria measurements variable. When, for any reason, the phoria values are questionable in the eyes of the examiner, one or more of the following will be of value in arriving at the truth.

1. Switch the Maddox Rod to the opposite eye. Then, noting the esophoria or exophoria value from the first examination, set this value on the Risley Rotary Prism before swinging it in front of the eye. Then, very slowly turn the prism knob. Have the patient state when the light and line separate. Very small amounts of rotation will move the light away from the line normally. If, in these cases, an individual has learned to estimate when the line and light touch (by roughly knowing the distance between the light and line as he sees them), small amounts of movement of the Risley Rotary Prism will not be detected as motion of the light. Two to four diopter variations will be often reported as "no motion" or "they are still lined up." This is impossible.

2. Knowing the esophoria or exophoria value, set the Risley Rotary Prism 1 diopter away from the true value and swing the prism before the eye. The Maddox Rod is before the other eye. Turn the Risley knob so as to rotate the prism across the neutral point to 1 diopter the other side. Repeat this fairly rapidly. This should be reported by the subject as movement of the light to "right" then "left" and "right" or vice versa as the case may be. The educated guesser will often be unable to detect this relative movement correctly and will not report it as such.

3. Using simple prisms or the convenient prism bar, neutralize esophoria or exophoria for distance by the cover test. When the correct prism value is in front of the eye, there will be no drifting from fixation point at twenty feet when the eyes are alternately covered. This prism is the true esophoria or exophoria value. This is the one irrefutable objective test for phorias.

4. In determining point of convergence using a muscle light attachment on the ophthalmoscope handle and watching the reflection of the light in the eyes, the earliest lateral drift of one eye can easily be detected.

5. In cases where esophoria is more than 5 diopters or less than 10 diopters, be reluctant to run the red lens test. Preferably, when there is doubt, recheck the phoria daily for the next few days. Incorporate any of the above three procedures as necessary. A red lens test should be run only once on an individual. A second test any time is often invalid because the person may well have learned "what he should see." When doing a red lens test, always determine esophoria or exophoria when diplopia occurs. By recording esophoria or exophoria in the field of action of each muscle, the specific muscle imbalance or paralysis can be determined.

6. Lack of sleep, excessive eye usage, or indulgence in alcohol the night before may affect true phoria values a great deal. The candidates' true eye measurements, whatever they are, is the goal. If the examiner uses all the aids at his disposal and arrives at the correct values, he then has answered the question, "Do the Eyes Have It." (LT J. J. Gordon, MC USN, CVG-2)

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